

Aesthetic rhinoplasty plus brow, eyelid and conchal surgery: pitfalls – complications – prevention

Abstract

Within the last years aesthetic surgery enjoys greater popularity and acceptance. One of the most frequently asked operations has been the aesthetic rhinoplasty. Hardly any other field of surgery is exposed to such a critical analysis than aesthetic rhinoplasty because the results are so obvious. According to the “International Society of Aesthetic Surgery” (ISAPS) over 980,000 cosmetic rhinoplasties have been performed in 2010. This corresponds to 10.4% of all registered aesthetic procedures worldwide. Complications can not be eliminated in such a large number of nasal operations. Five to 15% of all patients re-consult a doctor for a revision because they are much dissatisfied with their final rhinoplasty result. Findings of the tip followed by functional problems and irregularities of the nasal dorsum are named most frequently. The responsible rhinosurgeon has to take into account all anatomical and physiological details and to consider ethical and psychological aspects in the pre-selection and postoperative care of the patient. Aesthetic surgeons should be acquainted with terms and definitions like body image, dysmorphophobia or Thersites complex. Acronyms, like “SIMON” or “SYLVIA”, support the physician additionally to analyze and assess the patient. The following article describes the most frequent faults, complications and pitfalls after aesthetic rhinoplasty listed by the anatomical structure. Results will be analyzed and strategies and techniques will be suggested to correct the faults and to prevent them in the future. Furthermore psychologic, social and psychiatric aspects will be discussed and handling with aesthetic patients explained.

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Introduction

Within the last years aesthetic surgery enjoys greater popularity and acceptance among the population. This is also due to an extensive reporting in TV and print media. Because of the daily presence in media you might get the impression that Germany is one of the biggest “markets” in aesthetic surgery worldwide. But being compared to the international level, Germany is situated “only” in the centerfield on eleventh place. Countries like United States of America, Brasil, China, Japan, India and even France and Italy are ahead of Germany in aesthetic surgery. A similiar pattern is seen in non-operative procedures like Botox, Filler etc. For the last years “top three” countries have been USA, Brasil and China.

One of the most frequently asked operations has been the aesthetic rhinoplasty.

Hardly any other field of surgery is exposed to such a critical analysis than aesthetic rhinoplasty because the results are so obvious to the patient and the population. Thereby the surgeon has to dampen overwhelming expectations and to correct half-truths and circulating rumors in forums, in the internet and yellow press. Additionally the surgeon has to get rid of the zeitgeist that will be mediated by the press and influences, knowingly or unknowingly, the decision-making process of the patient.

Rhinoplasty is in fourth place of all aesthetic surgeries behind liposuction, breast augmentation and blepharoplasty. According to the “International Society of Aesthetic Surgery” (ISAPS) 985,325 cosmetic rhinoplasties have been performed in 2011. This corresponds to 10.4% of all registered aesthetic procedures worldwide [1].

Complications can not be eliminated in such a large number of nasal operations. Unfortunately we do not have reliable domestic and international informations about the exact percentage of complications. Different analysis report on 4–18% of all aesthetic procedures where rhinoplasty is supposed to be in front with 30% [2], [3].

The responsible rhinosurgeon has to take into account all anatomical and physiological details and to consider ethical and psychological aspects in the preselection and postoperative care of the patient. These details and aspects will be examined in the following chapters [4]. At the end some of the complications, findings and solutions are demonstrated in different cases.

Ethics and psychology in aesthetic rhinoplasty

Justification is usually not needed in plastic reconstructive surgery. It is totally different in the field of aesthetic sur-

gery. Ethics, the emotional and social situation of the patient and psychological and even psychiatric criteria play an important role in the decision to operate the patient [5].

In aesthetic procedures experts refer to psychological conditions over and over to justify "correct" medical care. The question of whether severe emotional suffering will be cured by aesthetic surgery can be answered negatively in most cases. Aesthetic surgery is definitely not psychiatry with a scalpel. However, it is possible to give patients more self confidence, life quality and maybe even more professional success and social acceptance by a successful aesthetic procedure. But it can also get into reverse by failed procedures and finally worsen the emotional problems of the patient. Finally, we return to the issue whether findings justify the surgical indication or not. This question can only be answered appropriately on condition that education, training, experience and responsibility form a unit for a "right" decision [6].

During anamnesis certain questions should be asked by the surgeon to evaluate patient's reasons for an aesthetic procedure:

- What does the patient expect from the aesthetic procedure? Did third parties urge the patient to do this operation or did the patient decide on his/hers own?
- Since when did the patient concern with the surgical procedure to improve his/hers appearance?
- Did the patient get an idea of the opportunities and limits of such a surgical procedure?
- Is the patient aware of a possible failure or even secondary procedures?
- Does the patient know the fundamental importance of the postoperative care and the duration until the final result will be achieved?
- Is the patient keenly aware of the fact that aesthetic surgery is an improvement of the current findings and not the fulfillment of perfection?

Soul suffering might be an indication for aesthetic surgery whether it depends on the body image. Body image is the psychological three-dimensional picture of patient's own body [7]. Multiple tests and analysis tried to describe neurovegetative and emotional characteristics which influence the body image. The typical aesthetic patient is characterized as extroverted, sociable, active, sensitive, very critical and self-aware with the quest for perfection. Acronyms like "SIMON" (single, immature, male, overexpecting, narcissistic) or "SYLVIA" (secure, young, listens, verbal, intelligent, attractive) are helpful for the physician to identify and classify these certain characters [8].

In different examinations only one-third of the patients have got a realistic perception of their appearance [9]. A minority of 2% had totally unrealistic expectations and the remaining two-thirds were characterized by emotional lability. Furthermore these studies revealed the importance of psychological and social factors. 75% of all patients want to get rid of their "defect" either to prevent unsolicited comments or to gain more social acceptance in friendships or partnerships. Only ten percent want to

start a new period of life or arouse admiration by the surgical procedure [10].

All these facts have to be considered during the preliminary consultations to prevent a misjudgment of the wishes and hopes of the patient. If you have any doubts or contradictions you should be very reserved to pronounce an indication for a surgical procedure [4]. The challenge is to say "No" to any unjustifiable wish of the patient to save further trouble for weeks, months or even years afterwards. The following inconsistencies might provide support to the surgeon for assessing patient's situation:

- Defects described by the patient do not exist objectively.
- The patient has got a known emotional disturbance or suffers from an acute mental crisis.
- The patient is convinced that everybody is whispering and laughing behind his/hers back because of the "defect".
- The patient is convinced that professional failure, marital difficulties and lack of social acceptance are based exclusively on the appearance.
- The patient did multiple aesthetic operations before. Sometimes a kind of obsession to aesthetic procedures is obvious.
- The patient has unreasonable expectations (pictures of stars etc.).
- The surgeon is pressed for time or blamed by the patient for everything when the patient meets with disapproval.

Dysmorphophobia und Thersites Complex

Further definitions must be known and distinguished by the physician to consider all aspects already. In 1886 Morselli described dysmorphophobia as the feeling of ugliness without any objective physical defect coupled with an extensive psychological stress. Since 1980 dysmorphophobia is accepted as an international classification of psychiatric diagnosis [10].

In 1957 Stutte defined in contrast the so-called Thersites complex [11], [12]. The term refers to Thersites the ugliest man among the greek troops at Troy 800 B.C. These patients suffer from a tremendous psychological stress which is disproportionate to the manifestation of the defect. Both groups are unified by an unrealistic self-perception; they feel ugly.

Whereas dysmorphophobia can be identified easily because of the lack of any defect, Thersites patients pose a challenge for the aesthetic surgeon because they have a defect if only minor. The small defect does not seem to be the problem but the disproportion between the defect and patient's complaints [13]. The surgical indication has to be balanced to the dysmorphophobia group. Dysmorphophobia is a contra-indication for aesthetical procedures. The level of suffering will not be alleviated by an operation. In contrast the physician has to face reproaches that accuse him/her as mainly responsible for

patient's situation. In some cases the medical misjudgment had disastrous consequences for surgical colleagues already. In case of doubt a psychiatric differential diagnosis is highly recommended.

Analysis and surgical management

Five to 15% of all patients re-consult a doctor for a revision because they are much dissatisfied with their final rhinoplasty result. It can be assumed that the rate of inwardly dissatisfied patients is considerably higher.

Findings of the tip followed by functional problems and irregularities of the nasal dorsum are named most frequently. This is not only limited to patients. Jack P. Gunter, one of the most experienced rhinosurgeons worldwide, declared in a self-critical analysis that the ideal nose could be obtained only in some cases [14].

In the following chapters the most frequent mistakes, complications and pitfalls after aesthetic rhinoplasty are listed by the anatomical structure. Results will be analyzed and strategies and techniques will be suggested to correct the faults and to prevent them in the future.

The number of complications and surgical techniques in rhinoplasty go beyond the scope of this article. Therefore we focus on the main results and alterations rhinosurgeons have to face day by day. This essay is addressed to rhinosurgeons who master the main concepts of different "rhinoschools" and apply these methods properly. We refer to the established textbooks of rhinoplasty [3], [15] for further details regarding e.g. anatomy, physiology, lines of incision because aesthetic rhinoplasty is not a beginners' procedure.

Pre-surgical planning

The basis for a satisfying result for the patient and the surgeon is the specific evaluation of the inner and outer nose. Are there any functional aspects or aesthetic problems only? A singular problem is uncommon. A combination of anatomical and functional problems can be identified also in "mere" aesthetic procedures. The specific analysis of the inner and outer nose has to be made on pictures and x-rays together with the patient. The accurate description of the individual problematic area helps the patient to assess the situation. Furthermore it is much easier for the physician to classify and understand patients' expectations and hopes. A pre-surgical morphing or sketching enables the surgeon to demonstrate possible results to the patient. But the patient has to consider that morphing or sketching is only an approximation and not a guarantee for the final result. In aesthetic rhinoplasty the function must be examined also by rhinomanometry before the operation to understand possible or real postoperative functional problems. Septal deformities can be determined by endoscopic examination because a straight septal line is more crucial for a good aesthetic result than for a satisfying function.

In addition patients should be informed of a common face asymmetry [16] before the surgery because the asymmetry prevents a straight nose. Otherwise the surgeon will be sued for medical malpractice possibly.

Anaesthesia

The aesthetic rhinoplasty will be performed under general anaesthesia. Depending on patients' compliance minor changes or isolated corrections of the nasal dorsum or tip can be done in analgo sedation or local anaesthesia, too. After the general disinfection of the vestibulum the combined infiltration of robivacaine hydrochloride (e.g. Naropin®) and epinephrine in mix ratio 1:100,000 follows with the subsequent insert of detumescent xylometazoline hydrochloride swabs (e.g. Otriven®). Specific hydrodissection facilitates a better preparation of the septum, the tip and the nasal dorsum.

1 Bony vault complications after previous rhinoplasty

1a) Problem: wide bony vault

Etiology: improperly or incomplete placed osteotomies; greenstick fracture; failure to perform additional osteotomies

Revision: re-osteotomy; double step lateral osteotomies; periosteal separation; three-week splinting with plaster or cast

Prevention: intraoperative sketching of the osteotomal lines; perform osteotomies transcutaneously with improved work angle of the chisel; prolonged immobilization over three weeks

1b) Problem: crooked bony nose

Etiology: asymmetric nasal pyramid because of asymmetric osteotomal lines; inappropriate dressing; unilateral greenstick fracture

Revision: re-osteotomy with readjustment of the nasal axis

Prevention: see wide bony vault

1c) Problem: depressed nasal sidewall

Etiology: improperly or incomplete placed osteotomies; asymmetric osteotomies; bad fracture; excessive mobilization of bony fragments

Revision: re-osteotomy; spreader graft; augmentation of the depressed side wall by fascia or cartilage as camouflage

Prevention: plan osteotomies carefully; CAVE! "chicken bones"

1d) Problem: so-called callous deformity

Etiology: real callous deformity is rare; mostly irregularities of the bone close to the radix are responsible for the deformity; often visible after detumescence; real cause is often unknown

Revision: smoothing with a rasp by closed or with a surgical fraise by an open approach

Prevention: for a secure assessment of the nasal dorsum intraoperative cooling with icy water is recommended

1e) Problem: overresection of the bony dorsum

Etiology: saddle or dent deformity; cartilagenous pseudo hump; deep radix; extensive en-bloc resection

Revision: augmentation with autologous or alloplastic fascia; autologous bruised cartilage or diced cartilage in fascia (DCF)

Prevention: appropriate planning; for a secure assessment of the nasal dorsum intraoperative cooling with icy water is recommended; better use a rasp than a chisel to remove the hump; usage of flat chisels

1f) Problem: underresection of the bony dorsum

Etiology: misapplication; wrong planning; residual bony hump; failure in nasal chisel projection

Revision: additional resection with rasp or chisel with surgical fraise if necessary

Prevention: appropriate planning; for a secure assessment of the nasal dorsum intraoperative cooling with icy water is recommended

2 Complications of the inner nose and the middle vault after previous rhinoplasty**2a) Problem: crooked cartilagenous nose and obstructed nasal breathing**

Etiology: residual deviation of the septum; paraspinal axis of the septum; deviation of the anterior pillar; soft septal cartilage

Revision: septal revision or if necessary extracorporeal septoplasty; for straightening a residual deviation or to stabilize soft cartilage stitching on of a splint (e.g. perpendicular plate) is recommended; centered septum by end-matched fixing to spina/premaxilla; reconstruction of the anterior pillar by a double layer of conchal cartilage

Prevention: precise analysis of septum and spina; no compromise in fixing the septum in a straight axis; construction of a straight anterior pillar

2b) Problem: narrow internal nasal valve

Etiology: narrow nose; alignment of nasal bone fragments is too tight; disregarding a tension nose characterized by an acute angle in the inner vault and slim nostrils; hump removal and narrowing bony vault without reconstruction of the inner vault; displacement or collapse of the upper lateral cartilage; short nasal bones

Revision: spreader grafts, spreader flaps, re-osteotomy if necessary by outfracturing

Prevention: pay attention to distinctive concave aesthetic dorsal lines; reconstruction of the nasal vault in all reducing rhinoplasties principally

3 Complications of the nasal dorsum after previous rhinoplasty**3a) Problem: saddle nose deformity**

Etiology: loss of septal height; large bony hump removal; inappropriate fixation of the septum with resulting retraction of nasal dorsum caused by scars; previous septal hematoma with infection; previous septal abscess

Revision: septal revision with secure fixing at nasal bones, upper lateral cartilage and anterior nasal spine by drill holes; augmentation of nasal dorsum with fascia, cartilage or DCF

Prevention: precise analysis; stable fixation at nasal bones, upper lateral cartilage and anterior nasal spine by sutures or drill holes; avoid overresection of bony nasal dorsum; better use a rasp than a chisel to remove the hump; usage of flat chisels (sharp disposable blades); for a secure assessment of the nasal dorsum intraoperative cooling with icy water is recommended

3b) Problem: inverted-V deformity

Etiology: displaced, collapsed or accidentally severed upper lateral cartilages after hump resection resulting in destabilizing the middle vault; overresection of a hump

Revision: extended spreader grafts or spreader flaps extending keystone-area

Prevention: pay attention to a predisposition for inverted V in tension noses with big humps; use split technique not en-bloc resection; in doubt always use spreader grafts or spreader flaps

3c) Problem: open roof deformity

Etiology: wide, flat nasal dorsum without any ridge; wrong or incomplete osteotomies with insufficient mobilisation of nasal bone fragments; deficient reconstruction of the nasal vault

Revision: revision osteotomy where necessary; extended spreader grafts

Prevention: no aggressive hump removal; use of spreader flap technique in reducing rhinoplasties; close

open roof with onlays (e.g. fascia or cartilage); extended spreader grafts

3d) Problem: polly oder parrot beak deformity

Etiology: raised supratip area without a supratip breakpoint because of inadequate reduction of septal cartilage; overresection of the bony nasal dorsum; drooping tip without anterior support; overresection of alar cartilage

Revision: according to findings: re-resection of cartilaginous nasal dorsum; augmentation of bony nasal dorsum (see above); remove excessive scars or subcutaneous tissue if necessary cortisone injection; reconstruction of the caudal cartilage framework; stabilizing the tip with columella strut; secure tip projection with suspension sutures

Prevention: keep a broad and stable septal framework and consider thick skin; adequate dressing; suspension sutures; keep 6 mm rim strips; specific profile control; for a secure assessment of the profile intraoperative cooling with icy water is recommended

3e) Problem: irregularities of the nasal dorsum

Etiology: palpable or even visible irregularities resulting in deviated nasal axis or oblique light reflexes

Revision: open or closed revision with deburring and use of camouflage onlays (fascia or cartilage); bony irregularities might be smoothed by a surgical fraise in particular but only by an open approach

Prevention: accurate preparation; leave no edges after bony or cartilage removal; smoothing with a surgical fraise; for a secure assessment of the nasal dorsum intraoperative cooling with icy water is recommended; visible and manual control; camouflage with e.g. fascia, camouflage should cover entire nasal dorsum to prevent steps (full length graft)

4 Complications of the nasal tip after previous rhinoplasty

Tip area is one of the most challenging parts of rhinoplasty. Tip defines the end of the aesthetic dorsal lines in the so-called tip defining points in frontal view. But further important parts of the nasal tip have to be considered in defining the tip like infratip breakpoint, supratip breakpoint and double break.

No other part of rhinoplasty is defined by skin quality and thickness to this extent like tip area and crucial for the final postoperative result additionally. Irregularities and edges can easily be felt and seen if skin is very thin. These phenomenas are concealed by thick skin but with the disadvantage not to accomplish a fine tip. Furthermore the weight of thick skin pushes tip area down.

4a) Problem: underprojected tip

Etiology: in profile tip is not the highest point; undefined tip area; possible reasons: insufficient support of the tip; especially in thick skin patients, inadequate suspension sutures with postoperative drooping; long upper lateral cartilages causing insufficient cranial rotation of alar cartilage

Revision: support the tip with columella strut; if necessary lateral crural steal technique; further procedures to increase projection: intradome suspension; dome division in very thick skin patients; combination of tip suspension and spanning suture; grafts: tip onlay; non integrated shield graft

Prevention: take time to check the profile; prevent drooping with sutures and grafts

4b) Problem: overprojected tip

Etiology: exclude pseudo overprojected tip caused by saddle nose; short upper lip; retrognathism; deep radix. Is there any additional over- or underrotation? In many cases caused by a wrong preoperative analysis

Revision: lateral sliding leads to a cranial rotation; medial sliding leads to caudal rotation; push down technique if necessary in combination with tongue in groove technique to guarantee a stable tip position

Prevention: take time to check the profile at the end of the operation

4c) Problem: broad columella

Etiology: broad columella basis with potential obstructed nasal airways; insertion of a broad columella strut without resection of soft tissue

Revision: excision of intercrural tissue; suturing medial crus; if necessary resection of the footplates and joining medial crus and columella strut

Prevention: pre- und intraoperative visual analysis in worm's eye-view especially after positioning a columella strut

4d) Problem: columella show

Etiology: caudal extended columella by a columella strut or extended shield graft; retraction of the alar rim caused by overaggressive trimming

Revision: tongue in groove technique; shortening anterior septal border; correction of alar rim with rim grafts or composite grafts

Prevention: pre- und intraoperative analysis; for long septal cartilage shortening anterior septal border applying columella struts

4e) Problem: hidden columella

Etiology: junction between upper lip and columella is re-located to the attachment of nasal wings resulting in a

smaller nasolabial angle; sometimes obstructive nasal airway; overresection of the anterior septal border

Revision: relocation of the columella with columella strut or caudal relocation of the septum by an extracorporeal reconstruction or extension with septal extension graft

Prevention: pre- und intraoperative analysis; specific shortening of the anterior septal border

4f) Problem: drooping tip

Etiology: insufficient columella support

Revision: columella strut; tongue in groove technique; suspension or position sutures to support cranial rotation

Prevention: control tip support especially of long-term drooping; in doubt columella struts

4g) Problem: boxy tip

Etiology: broad and plump tip with diverging tip defining points; often in thick and seborrhoeal skin patients; undefined dome

Revision: remove interdomal fat and tissue carefully; inter- and transdomal sutures; dome division technique; stitching up non integrated shield grafts

Prevention: specific pre- and intraoperative tip analysis

4h) Problem: asymmetric tip

Etiology: asymmetric contour and shape of alar cartilage; asymmetric camouflage; asymmetric sutures; scars

Revision: depends on findings: camouflage; total revision; grafts (fascia, cartilage); sutures

Prevention: specific intra- and postoperative tip analysis; sometimes irregularities due to scars can not be avoided

4i) Problem: alar retraction

Etiology: retraction of alar rim due to overaggressive cephalic trim

Revision: batten graft; alar rim graft; composite graft made by the inner surface of the concha

Prevention: keep a minimum of a 6 mm alar strip; no resection of the mucosa of the vestibulum, also after sliding technique

4j) Problem: alar collapse

Etiology: lack of alar stability during the inspiration due to overaggressive resection of alar cartilage; ignoring alar strip width of 6 mm; soft alar cartilage

Revision: on small cartilage residuals: alar batten graft; lateral crural strut graft or under batten graft; on broad lateral crura: alar duplicature like lateral crural overlay or lateral crural underlay; Gruber sutures to correct concave/convex irregularities

Prevention: preoperative functional analysis; no aggressive alar resection; keep minimum of a 6 mm strip; consider soft and unstable cartilage intraoperatively

5 Complications of the skin envelope after previous rhinoplasty

5a) Problem: large skin envelope

Etiology: surplus skin after a reducing rhinoplasty; thick skin; old skin with loss of elasticity

Revision: surgical thinning is limited; local cortisone injection reserved to experienced rhinosurgeons only; vertical fusiform excision (supra tip excision); interior nose lift

Gefahren: visible scars; skin necrosis; final result is sometimes not predictable especially after cortisone injection

Prevention: specific preoperative analysis; discussing and informing the procedure thoroughly especially about possible results and undesirable side effects; if necessary procedure in two steps; if necessary dressing during several weeks

5b) Problem: increased vascularization

Etiology: increased vascularization due to inaccurate preparation; individual predisposition; local cortisone injection; patient's medication

Revision: treatment with dye laser

Prevention: anamnesis; thorough informed consent; strict sub-SMAS preparation; no thinning of the skin envelope; local cortisone injection reserved to experienced rhinosurgeons only

5c) Problem: intranasal cysts

Etiology: inaccurate preparation without considering the extramucosal level; displaced mucosa during preparation

Revision: en bloc excision of the cyst; remove displaced tissue; accurate sutures

Prevention: accurate preparation under visual control; careful infiltration; preparation under controlled hypotension

5d) Problem: hematoma

Etiology: during osteotomies difficult to avoid

Revision: intraoperative cooling with icy water is recommended; mechanical cooling postoperatively is most effective

Prevention: gentle osteotomies through transcutaneous stab incisions with chisel no. 2 or 3; push vessels away by subperiosteal scraping along osteotomal lines; intraoperative cooling with icy water is recommended

5e) Problem: visible scars or scar tracks after open approach

Etiology: columella incision too low or too high; asymmetric incision lines; inaccurate sutures; rough handling of the tissue (e.g. forceps)

Revision: surgical scar revision; re-suturing with non-absorbable suture 7-0

Prevention: incision line at the narrowest part of the columella; inverted-V incision; no stair step incision due to greater risk of asymmetry

5f) Problem: skin ulcer

Etiology: disturbed blood supply due to overaggressive thinning of the skin envelope; based on too tight dressings or casts; caused by local cortisone injection or other medications; supra tip area is mostly affected

Revision: non-surgical treatment with ointment dressings depending on the findings (e.g. Bepanthen®, Irujol® etc.); closed patient management; if necessary micro dermabrasio

Prevention: check patient's medication; in doubt no thinning of the skin rather do supra tip excision; local cortisone injection reserved to experienced rhinosurgeons only; check dressing and plaster; in case of undefinable pain remove all dressings!

Case 1

Etiology: 37-year-old patient, four (!) previous rhinoplasties, overprojected dorsum, hidden columella, crooked nose, asymmetric tip and nostrils, flat left dome
Intraoperative findings: overresection of anterior septal border, remaining septal deviation, attempt of septal reconstruction by rip cartilage, malformation and concavity of the lateral crus

Revision: septal reconstruction with ear cartilage, reconstruction of the anterior pillar with conchal cartilage (sandwich graft), re-osteotomy (low-to-low), correction of concavity by lateral crural overlay technique, tip defining by dome division

See Figure 1, Figure 2, Figure 3, Figure 4, Figure 5, Figure 6, Figure 7.

Case 2

Etiology: 24-year-old patient, one previous rhinoplasty, c-shaped crooked nose, drooping tip, clumsy tip, small nasolabial angle, pseudo-overprojected dorsum, wide alar; intraoperative findings: septal fracture and scarification, overresection of anterior septal border

Revision: extracorporeal septal reconstruction with stitched on perpendicular plate, widening inner vault with PDS foil, shifting septum ventrally to correct nasolabial angle, tip support with tongue in groove technique, paramedian, transversal and low-to-low re-osteotomy

See Figure 8, Figure 9, Figure 10, Figure 11, Figure 12.

Case 3

Etiology: 25-year-old patient, one previous rhinoplasty, residual hump, crooked nose still too big, irregularities of the nasal dorsum, inverted-V deformity, asymmetric dome with retracted soft triangles, overprojected tip, flaring, nasolabial angle too big

Revision: resection of the hump, extended spreader grafts, medial sliding, spanning sutures, inverted suspension sutures, reduced nasolabial angle, reconstruction of nasal dorsum with bruised cartilage and alloplastic fascia, shield graft

See Figure 13, Figure 14, Figure 15, Figure 16, Figure 17, Figure 18, Figure 19.

Case 4

Etiology: 18-year-old patient, one previous septoplasty, saddle nose, wide nasal bony dorsum, totally resected anterior septal border, hidden columella

Revision: reconstruction of anterior septal border with conchal cartilage, reconstruction of nasal dorsum with DCF

See Figure 20, Figure 21, Figure 22, Figure 23, Figure 24, Figure 25.

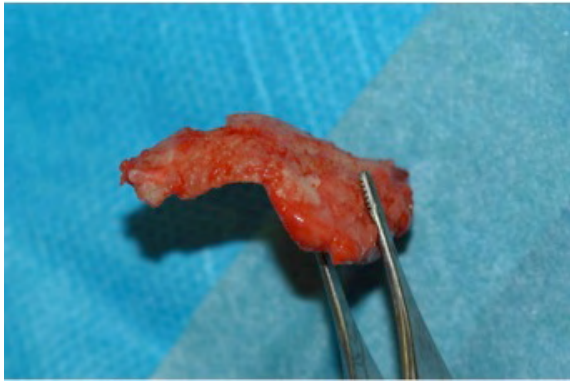


Figure 1: Septal deviation

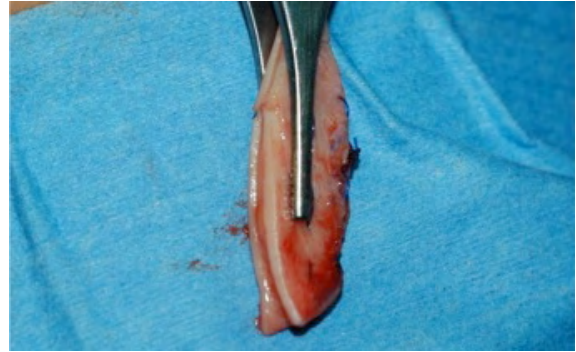


Figure 4: Sandwich graft made of conchal cartilage



Figure 2: Tip malformation and concavity



Figure 5: Pre- and 1 year postop



Figure 3: Tip malformation and concavity



Figure 6: Pre- and 1 year postop



Figure 7: Pre- and 1 year postop

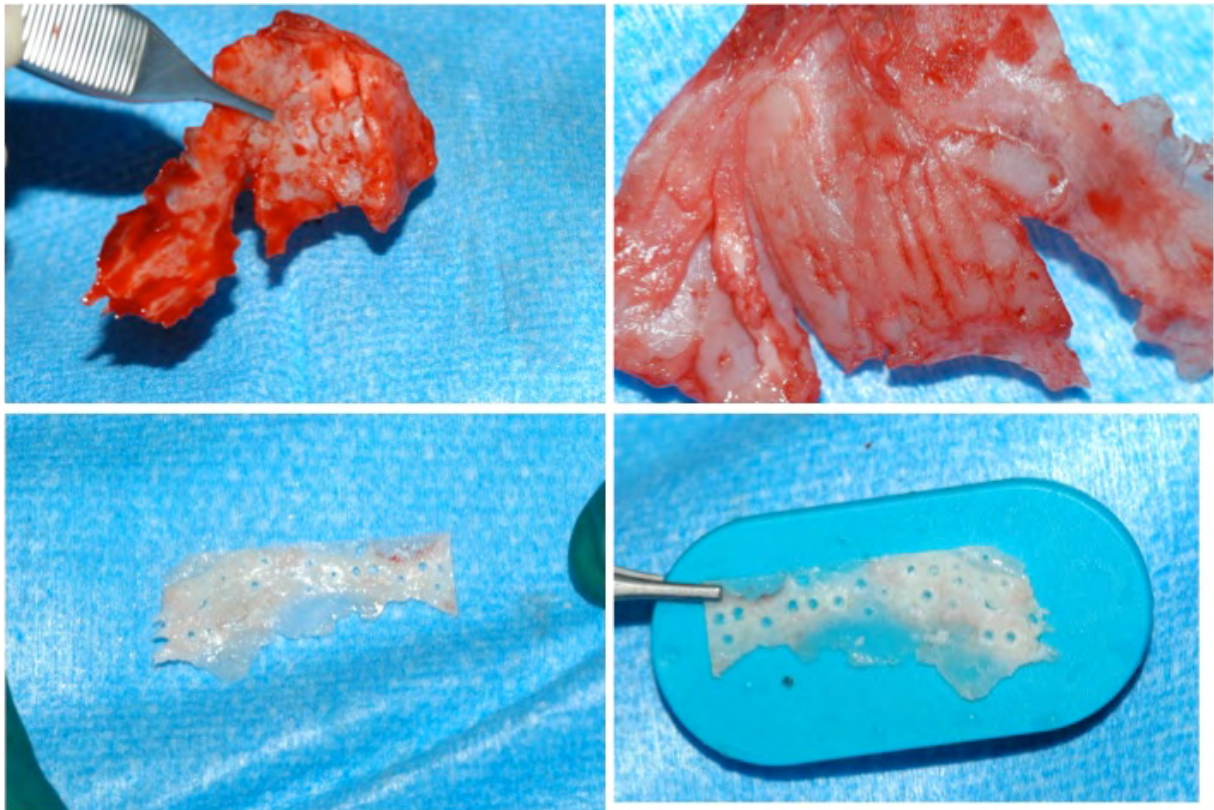


Figure 8: Septal findings and preparation of perpendicular plate

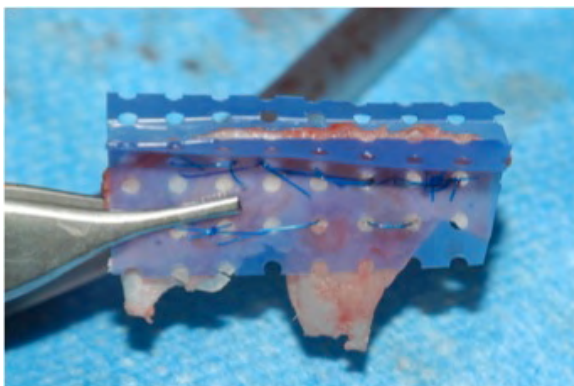


Figure 9: Septal reconstruction and PDS foil



Figure 11: Pre- and 1 year postop



Figure 10: Pre- and 1 year postop



Figure 12: Pre- and 1 year postop



Figure 13: Spanning suture



Figure 14: Anchoring tip to the septum, extended spreader grafts



Figure 15: Shield graft



Figure 16: Alloplastic fascia to camouflage nasal dorsum



Figure 17: Pre- and 1 year postop

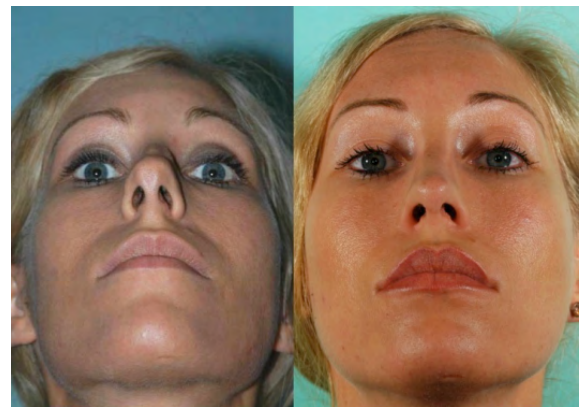


Figure 18: Pre- and 1 year postop



Figure 19: Pre- and 1 year postop



Figure 20: Conchal cartilage prepared for diced cartilage



Figure 21: Diced cartilage made of concha



Figure 22: Diced cartilage in fascia (DCF) as neo-dorsum



Figure 22: Diced cartilage in fascia (DCF) as neo-dorsum



Figure 24: Pre- and 1 year postop



Figure 25: Pre- and 1 year postop

Post-operative management

After the careful closure of all approaches an accurate cast or plaster must be adjusted. We recommend to complete the dressing during general anaesthetic or analgo sedation because the procedure is more difficult during the recovery from the anaesthesia and might jeopardize the final result. A ten minute extended sedation or anaesthesia may save further trouble, explanations and discussions in the future.

Patient management after surgery is an essential criterion in dealing with aesthetic patients. Close and effective examinations and controls of the wounds and dressings give you and your patient a sense of security. After removal of the plaster and the dressing the treatment is not finished yet. The aforementioned criteria during the pre-surgical consultation become important again and have to be considered. Repeated explanations about reduction of the swelling and potential resulting irregularities or asymmetries belong to daily practice in aesthetic rhinosurgery [17].

Brow, eyelid and conchal surgery

Blepharoplasty is the most common surgical aesthetic procedures in the face. Often these patients consult a surgeon even when substantial functional limitations, such as a restricted field of vision, or a rapid fatigue already occurred. Aging of the skin does not only lead to a relaxation of the facial skin with sinking and atrophy of the facial soft tissue, but these processes occur in the periorbital region with the typical image of an eyebrow ptosis and blepharochalasis with a relaxation of the upper and lower eyelids. Preoperative analysis and diagnosis is decisive to avoid faults.

If a patient consults a surgeon because of an upper eyelid surgery, it is necessary to check whether a sole upper eyelid surgery is medically sensible, or a browlift or even both might be performed to get a good result. A browlift can be done concurrently but we prefer a separate procedure with an interval of at least eight weeks because of a greater accuracy.

If a browlift is medically appropriate the technique depends on the anatomical characteristics especially on the forehead.

An endoscopic approach is not promising in all cases at all. This procedure specifically applies to short or midsize foreheads. Otherwise we prefer a direct browlift or mid-foreheadlift or a lateral temple lift.

6 Postoperative changes after browlift

6a) Problem: inadequate browlift after an endolift

Etiology: wrong surgical procedure or wrong surgical technique

Revision: in the case of a long forehead direct browlift, in case of pronounced creases midforehead lift. Periosteum has to be revised in case of an incomplete surgical sectioning in the area of supra orbital rim

Prevention: preoperative control of the brow mobility by pulling the brow cranially in the area of hairline; careful intraoperative control especially laterally whether all periosteal cords have been released.

6b) Problem: asymmetric redescending of the brows

Etiology: deficient fixation, insufficient resection of the depressor muscles (Musculus corrugator, Musculus procerus)

Revision: careful fixation of the translocated forehead e.g. by microscrews or microplates at the caudal wound margin to guarantee durably affixed tissue. Application of endotine anchors or accomplish transosseous fixation alternatively.

Prevention: careful resection of the depressors and permanent fixation

6c) Problem: obvious scars especially after direct browlift

Etiology: skin excision too high, inappropriate suture technique

Revision: if scar is too high, relocation by caudal incision at the upper margin of the brow, if necessary massage to loosen forehead, wound closure by aesthetic suture techniques

Prevention: *when seated* definite preoperative planning, widespread mobilization caudally and multilayer suture techniques without interrupted sutures.

6d) Problem: asymmetry caused by nerve damage

Etiology: a chronic paralysis after browlift is very rare. Mostly it is only obvious when the patient tries to move the brow

Revision: an operative revision is contraindicated based on the risk to reinjure the nerve. A sensitive patient guidance and honest information is substantial. Be honest to your patient! Sometimes a temporary symmetric alignment of the brow by botulinum toxin may be helpful for the patient.

Prevention: ensure an exact anatomical preparation, strictly subcutaneously (direct browlift, midforehead lift, temporal lift) or subperiosteally (endoscopic assisted forehead lift)

Case 5

Etiology: s/p blepharoplasty with vast surplus skin and lateral hooding (Figure 26)



Figure 26: s/p blepharoplasty

Revision: direct lateral browlift and upper eyelid revision (Figure 27)



Figure 27: s/p revision

7 Postoperative changes after upper eyelid surgery

It is very important to evaluate whether an upper eyelid ptosis exists besides the blepharochalasis and the relaxed upper eyelid skin. Use old pictures to clarify whether it is an age-related dehiscence of the levator tendon of the tarsus or a congenital ptosis. Pictures are also valuable to put the postoperative results into perspective.

7a) Problem: Insufficient procedure with lateral hooding

Etiology: incorrect planning and false drawing

Revision: Revision after measuring skin surplus *when seated!*

Prevention: Excision must not end at height of lateral canthus.

7b) Problem: Loss of the supratarsal crease

Etiology: The skin fixed above the tarsus was also resected. The distance between the edge of the eyelid and the caudal incision should be around 10 mm.

Revision: difficult! Try to rebuild the supratarsal groove by a continuous suture at the cranial tarsal edge that also catches the deep layers (tarsus or levator tendon)

Prevention: definite planning *when seated!*, distance between the edge of the eyelid and the planned skin excision should be at least 8 mm.

7c) Problem: Epicanthal crease

Etiology: sail-shaped scar under tension above medial eye angle

Revision: double z-plasty or jumping man to lengthen the scar

Prevention: Do not touch lateral nose with your incision, medial caudal incision should incline cranial incision at an angle of 45°.

7d) Problem: Eye circles

Etiology: A-frame deformity caused by a too extended fat resection

Revision: Free fat transplants either by a free fat dermis-tx or by lipostructuring

Prevention: No extended fat trimming, therefore do not extract prolapsed orbital fat. Cauterising is better than resecting the fat to achieve contraction.

Case 6

Etiology: 62-year-old lady, s/p blepharoplasty, skin surplus above the eyelid edge (Figure 28) caused on the false to resect the fixed skin above the tarsus. Therefore scar is running just superior the eyelid edge and not at least 8–10 mm above (Figure 29).



Figure 28: s/p blepharoplasty with skin surplus



Figure 29: Broken line: inadequate scar line

Revision: total upper eyelid revision

8 Postoperative changes after lower eyelid surgery

Lower eyelid surgeries are the second most procedures with postoperative complications after rhinoplasties. Modern lower eyelid surgery is defined by analyzing relaxation and in particular the vector (relation between highest point of the bulbus and the infraorbital rim) and the tilt (comparison of horizontal line to the axis medial-lateral canthus). This concept avoids mistakes and complications respectively.

8a) Problem: Scleral Show

Etiology: Limbus is obviously above the edge of the lower eye, too much white of the eye can be seen

Revision: depends on lower eyelid atony. If it is moderate just lift the inferior retinaculum and fix it to the periosteum of the supraorbital region, easier but less effective: canthopexy

A tarsal strip even a transosseous fixation is necessary if an extensive eyelid laxity (lateral canthus can be moved more than 10 mm) might be diagnosed

Prevention: preoperative check of eyelid laxity, the tilt and the vector

8b) Problem: Round Eye

Etiology: unnatural round eye caused by disregard of an eyelid laxity maybe in combination with a too extended skin resection in the middle of the lower eyelid

Revision: tighten the edge of the lower eyelid as mentioned above

Prevention: stabilizing lateral lid angle, skin resection laterally more than in the middle of the lower eyelid

8c) Problem: Ectropium

Etiology: Which lamella is affected? Was too much skin resected? (anterior lamella), are there extensive scars in the median lamella?, is there a negative vector or was a horizontal lid laxity disregarded?

Revision: corresponding to analysis:

- Anterior lamella: correction of the skin deficit by skin transplantation or a local flap. A midfacelift might ac-

complish this too, but it is much more complicated and risky.

- Medial lamella: correction of scars and of the ectropium by spacer grafts.
- Negative vector: a lower eyelid lifting is contraindicated because the negative vector worsens the result (polar bear syndrome)
- If a laxity of the lower eyelid was demonstrated preoperatively, a tarsal strip might be the best technique to shorten the lower eyelid

Prevention: definite analysis preoperatively, especially of the horizontal eyelid tension and the vector

Case 7

Etiology: 54-year-old woman, s/p lower eyelid lifting with too much skin resection and an ectropium subsequently (Figure 30).



Figure 30: s/p lower eyelid surgery with a massive ectropium

Revision: s/p revision by full-thickness skin grafts (Figure 31).



Figure 31: s/p full-thickness skin graft

9 Postoperative changes after conchal surgery

Protruding ears are a common malformation that will be corrected by surgery to prevent psychological aberrations. An exact analysis is the key to choose the best operative technique. You have to differ between a hypogenetic anthelix fold or a conchal hyperplasia or both.

You will get dissatisfying and unnatural results if you choose the inadequate operative procedure. A complete symmetry of both ears is quite often not achieved but might also usually not be diagnosed naturally.

The following surgical techniques are available, both numerous modifications and alternatives suggest that the

optimal operative technique to correct all kinds of protruding ears does not exist.

- Scoring technique
- Cutting technique
- Suture technique
- Cartilage resection to lower the concha

Depending on the technique numerous complications may occur.

9a) Problem: retroauricular keloid

Etiology: a retroauricular keloid topping the helix is obvious.

Revision: The success of keloid therapy is not guaranteed. An excision of the scar and tensionless closure of the wound is established. Sometimes a postoperative irradiation or continuous pressure with an individual purpose-built earclip is necessary.

Prevention: It has been our experience that keloid is provoked by the postauricular skin excision in some techniques. Therefore we do not excise any skin principally.

9b) Problem: re-protruding ears

Etiology: A re-protruding ear mostly happens due to actuating power that has not been modified. The cartilage was forced into a new position by sutures only. The sutures tear before scarring might guarantee a stabilized auricula.

Revision: Modifying and weakening the actuating power with stable fixation

Prevention: Modify the cartilage carefully, especially thick cartilage by scarification or grinding. Careful knotting of tension belts with additional stabilizing knots.

9c) Problem: unnatural shape

Etiology: inadequate surgical technique by pulling the threads too tight or using a coarse cutting technique with a resulting sharp edged anthelix. Disregarding conchal hyperplasia with a topped anthelix.

Revision: difficult! because cartilage changes its structure. Scar revision and careful use of the adequate operative technique.

Prevention: definite analysis to realize conchal hyperplasia, cutting technique is more dangerous than suture technique, do not knot too tight, prefixing the auricular shape by cannulas that will be replaced by sutures.

9d) Problem: Telephone ear

Etiology: While concha is very close to the mastoid, earlobe and upper ear protrude

Revision: Revision to improve shape of the superior crus and to rotate the earlobe.

Prevention: careful contouring of the superior crus, fix supporting threads not in the middle of the concha, but in the superial-posterial area.

Case 8

Etiology: 7-year-old girl with a hypogenetic malformation and a resulting deformation of the upper right ear after preceding surgery by thread method (Figure 32, Figure 33)



Figure 32: s/p conchal surgery



Figure 33: Detailed view of Figure 32

Revision: Revision by posterial approach. Remodelling of the anthelix and the concave scapha after removal of all

sutures. Additionally we performed an earlobe and conchal rotation (Figure 34).



Figure 34: Postoperative status

Conclusion

Considering all social and psychological aspects of the patient during the consultation faults and complications might be prevented preoperatively. Therefore appropriate questionnaires facilitate the process of assessing the patients' wishes and hopes [9]. Additionally the aesthetic surgeon ought to know psychiatric diseases like dysmorphophobia or Thersites complex not to get in trouble in advance.

All problems and physical changes have to be analyzed in detail and adjusted with required techniques intraoperatively. The consequences of a secondary or even third correction especially in aesthetic procedures should not be underestimated.

The combination of surgical procedure paid for by the patients themselves, the resulting expectations and the character of an aesthetic patient requires during all parts of consultation intense concentration, attention and endurance from the rhinosurgeon.

Notes

Competing interests

The authors declare that they have no competing interests.

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